

STP Quarterly Review

13 Jul 2009

3QFY09

**Dr. William F. Denig, Chief
Solar & Terrestrial Physics Division**

NOAA/NESDIS/NGDC

303 497-6323

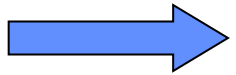
William.Denig@noaa.gov





OUTLINE

Solar & Terrestrial Physics Division



STP Program Overview

Milestones & Performance Measures

Awards and Personnel Kudos

Accomplishments

Special Interest Items

Issues & Summary



Solar & Terrestrial Physics Division Personnel



Solar & Terrestrial Physics Division

William Denig/F, Chief

Janet Brown/F, Secretary

Karen Horan/F, Physical Science Tech

Craig Clark/F, Scientific Data Tech

Space Environment Group (SEG)

Eric Kihn/F, Team Lead

- Terry Bullett/C
- Ray Conkright/C
- Ed Erwin/F
- Rob Redmon/F
- Herb Sauer/G
- Dan Wilkinson/F
- Kelly Prendergast/F
- Jim Manley/C
- Helen Coffey/G
- Peter Elespuru/C
- Anu Sunaravel/S
- John Schminky/S

Earth Observation Group (EOG)

Chris Elvidge/F, Team Lead

- Kim Baugh/C
- Ben Tuttle/C
- Tilottama Ghosh/C
- Daniel Ziskin/C

Key

F – Federal

C – CIRES/CIRA

S – Student

G – Guest Scientist

Earth Geophysics Group (EGG)

Vacant/F, Team Lead

- Patrick Alken/C
- Rob Prentice/C
- Fran Coloma/C
- Justin Mabie/C
- Andrea Bilich/F, NGS
- Don Herzog/G



STP Division Overview

Personnel Changes



- **Gains**

- Peter Elespuru – CIRES PRA (SEG) – Space Weather Modeler
- John Schminky – CIRES Student (SEG) – CDMP Ionospheric Support
- Matthew Niznik – Hollings Scholar (SEG) – University of Miami
- Salman Naqvi – Hollings Scholar (EOG) – NJ Institute of Technology

- **Losses**

- None

- **Vacancies**

- SEG Solar Physicist – On hold
- STP Real-time Data Manager – On hold
- EOG Data Manager – Status unknown

- **Inbound**

- NGS Feds (3) – Dan Winester, Tim Wilkins & David Schmerge

- **Pending**

- NPOESS S/W Engineer – Active search – CIRA
- SWx Product Developer – Active search – CIRA



STP Division Overview

Summer Hollings Scholars

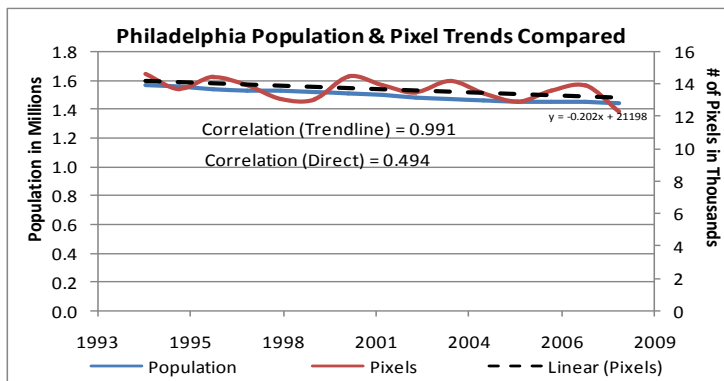


Matthew Niznik (University of Miami) is investigating the characteristics of the current lull in solar activity using the NGDC database of historical sunspot numbers and possible implications for global climate change. His summer mentor is Bill Denig.

Waning Years: A New Solar Index



Salman Naqvi (New Jersey Institute of Technology) is using nighttime lights imagery to monitor urban growth for cities within the northeastern U.S. Daniel Ziskin is his summer mentor.





STP Division Overview

Agreements – Status



STATUS

Scope	Team	Type	Partner	NOAA Legal	DOC Legal	NGDC Signed	Partner Signed	Start	End	Status	
CORS Support	EGG	AGR	NGS	n/a	n/a	X	X	01-Oct-03	30-Sep-09	G	In place - nothing to report
SWx Climatology	SEG	MOU	AFCCC	X	X	X	X	27-May-04	01-Oct-14	G	In place - nothing to report
GPS Data (CORS)	EGG	MOA	Multi	n/a	n/a	X	X	20-Sep-04	n/a	G	<i>Renewal under discussion</i>
NASIC	EOG	MOU	NASIC	X	X	X	X	09-Mar-06	01-Jan-11	G	In place - nothing to report
Ionospheric Data	SEG	MOU	AFWA	X	X	X	X	21-Aug-06	21-Aug-11	G	In place - nothing to report
DMSP Archive	SEG	MOA	DMSP	X	X	X	X	30-Mar-07	30-Sep-09	G	<i>Renewal under discussion</i>
Ionosonde Sites	SEG	MOU	USGS	X	X	X	X	06-Apr-09	05-Apr-14	G	In place - nothing to report
SEM-N - AFRL	SEG	MOA	AFRL	X	X	X	X	11-May-09	11-May-14	G	In place - nothing to report
Earth Imagery	EOG	MOU	NGA	X				TBD	TBD	R	<i>Processing within legal</i>

Updated: 12 July 09



STP Division Overview

CDMP – Status



Dataset	Funded in FY09	Submitted - FY10	POC	Contractor (\$K) - FY09	Contractor (\$K) - Expended YTD	NGDC - FY09
Heat capacity mapping mission (L44)	√	<i>tbd</i>	Elvidge	425.0	57.8	42.5
DMSP film scanning (L3)	√	<i>tbd</i>	Elvidge	403.0	36.7	40.3
Historical solar spectral data (L16)	√	<i>tbd</i>	Horan	50.0	27.8	5.0
Cosmic rays - Forbush archives (L42)	√	<i>tbd</i>	Denig/Coffey	85.0	102.6	8.5
Historical solar observations (L18)	√	<i>tbd</i>	Horan	90.0	35.3	9.0
Historical ionosonde records (L7)	√	<i>tbd</i>	Redmon	75.0	18.6	7.5

Updated: 12 Jul 09



STP Division Overview

Balance Sheet



FTEs					
	STP	EGG	EOG	SEG	Sum
Federal FTEs	0.00	1.08	1.93	6.49	9.50
CIRES FTEs	0.00	2.10	3.05	2.68	7.83
Sub-Total	0.00	3.18	4.98	9.17	17.33
Total Program FTEs:					17.33
Income					
	STP	EGG	EOG	SEG	Sum
Carryover (from FY08)					0
Base Fund Allocation	0	135,887	377,183	852,129	1,365,200
Base Travel Allotment		2,575	3,628	14,717	20,920
Other NOAA	0	275,000	153,800	2,586,000	3,014,800
non-NOAA	0	0	208,000	320,000	528,000
Sub-total:	0	413,462	742,611	3,772,846	4,928,920
Total Program Income:					\$4,928,920
Expenses					
	STP	EGG	EOG	SEG	Sum
OD Overhead	0	0	20,800	54,323	75,123
Federal Salaries	0	144,583	426,527	1,155,140	1,726,249
CIRES Salaries	0	189,459	322,492	278,135	790,085
Other CIRES	0	4,962	15,000	5,000	24,962
Contracts	0	95,605	0	1,892,177	1,987,782
Approved Fed Travel (Base)	0	2,575	3,628	14,717	20,920
Approved Fed Travel (Customer)	0	0	16,371	33,387	49,758
Transfers	0	0	0	240,000	240,000
Assorted Costs	0	0	12,000	5,100	17,100
Publications	0	3,000	5,000	7,000	15,000
Sub-total:	0	440,183	821,818	3,684,978	4,946,979
Total Program Expenses:					\$4,946,979

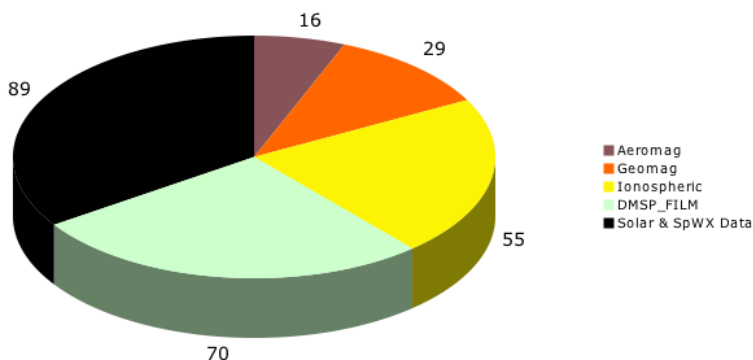


SRP Division Overview

Tivoli Mound



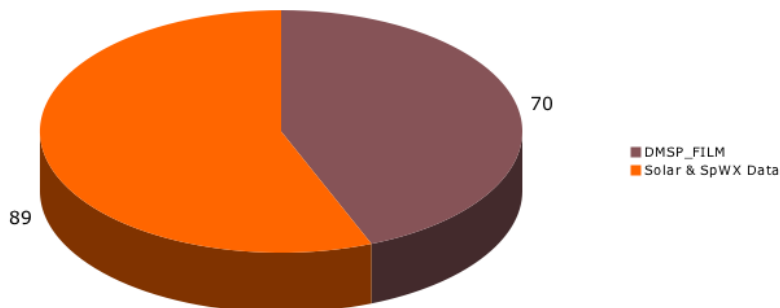
Remaining STP Data in the Tivoli Mound (GB)



2QFY09

Total Size: 258 GB

Remaining STP Data in the Tivoli Mound (GB)



3QFY09

Total Size: 159 GB

	2QFY09	3QFY09
DMSP	70 GB	70 GB
AeroMag	16 GB	-
GeoMag	29 GB	-
Iono	55 GB	-
SWx	89 GB	89 GB
Total	258 GB	159 GB

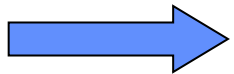


OUTLINE

Solar & Terrestrial Physics Division



STP Program Overview



Milestones & Performance Measures

Awards and Personnel Kudos

Accomplishments

Special Interest Items

Issues & Summary



Milestones & Performance Measures

FY09 Milestones



PPBES Program	STP FY09 Milestones (Proposed)	Status	Planned Completion Date	Actual Completion Date	Responsible Person
AOP → Space Weather	Complete data rescue of available synoptic solar drawings from the Wendelstein Solar Observatory for the period 1946-1987.	C	(Q1) 12/31/2008	(Q1) 12/31/2008	Horan / Fischman
AOP → Marine Transportation Systems	Develop a generalized methodology for the detection of coral reef bleaching from satellite-based imagery.	C	(Q1) 12/31/2008	(Q1) 12/31/2008	Ziskin
Marine Transportation Systems	Initiate reprocessing of Defense Meteorological Satellite Program (DMSP) imagery for the period 1992-2005 using new software procedures providing archival product consistency.	C	(Q2) 3/31/2009	(Q2) 2/28/2009	Erwin
Space Weather	Implement new visualization product for energetic particle data from the POES Space Environment Monitor (SEM) that will provide a planetary perspective for this environment. (SWP)	C	(Q2) 3/31/2009	(Q2) 3/31/2009	Wilkinson
AOP → Space Weather	Release version 5 of the NOAA Space Physics Interactive Data Resource (SPIDR) utility including improved database access and metadata editing capabilities. (SWP)	C	(Q2) 3/31/2009	(Q2) 3/31/2009	Kihn
Space Weather	Develop scripts to convert raw magnetometer data into WDC format and make those scripts available to the public to increase the useable of the NOAA data products.	C	(Q3) 6/30/2009	(Q3) 6/30/2009	Mabie
AOP → Marine Transportation Systems	Estimate national and global gas flaring levels for 2007 using Defense Meteorological Satellite Program (DMSP) nighttime lights imagery.	C	(Q3) 6/30/2009	(Q3) 6/30/2009	Elvidge
Space Weather	Provide functional requirements and mapping to the CLASS Developmental Team for the Simple NOAA Archive Access Portal (SNAAP) API.	C	(Q3) 6/30/2009	(Q3) 6/30/2009	Kihn
Marine Transportation Systems	Complete development of a radiance calibrated global nighttime lights product set for Defense Meteorological Satellite Program (DMSP) spanning 1996-2006.	G	(Q4) 9/30/2009		Elvidge
AOP → Space Weather	Acquire and archive historical GOES 8-12 "raw" data files currently maintained by the NWS Space Weather Prediction Center (SWPC) on CD. (SWP)	Y	(Q4) 9/30/2009		Wilkinson
Space Weather	Release version 2 of the MIRRION ionospheric sounding data collection, processing, and dissemination system for increased station capabilities and improved reliability.	G	(Q4) 9/30/2009		Redmon

AOP → AOP milestone

C Complete
G On-track

Y Watch Item
R Issue



Milestone (Internal NGDC)

Scripts for Ingesting Magnetometer Data



Milestone: Develop scripts to convert raw magnetometer data into WDC format and make those scripts available to the public to increase the useable of the NOAA data products.

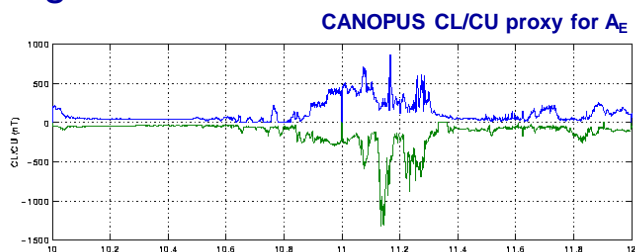
Background: Geomagnetic data received in multiple formats must be converted to a single format to facilitate user needs. This effort, to date, has converted magnetic data from the Canadian CANOPUS to IAGA2002 format which can be easily loaded into SPIDR.

Completion Date:

Planned (FY09-3Q) 30Jun09

Actual (FY09-3Q) 30Jun09

Significance: Improves user access to global magnetometer data via a single format.



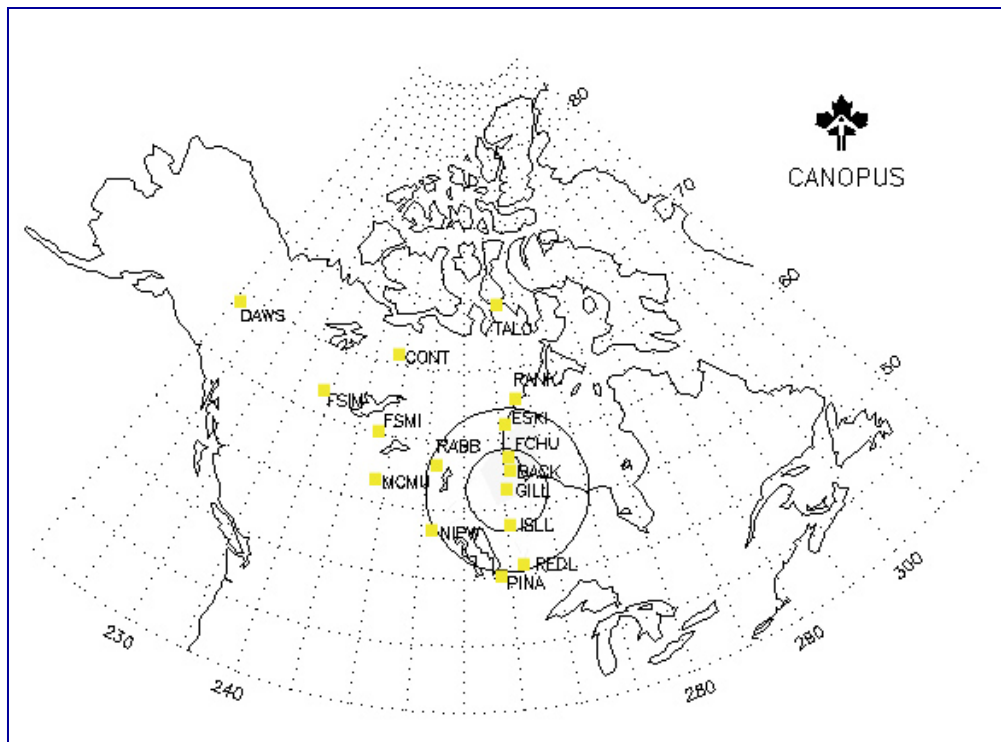
Key:

IAGA – International Association of Geophysics and Aeronomy

CANOPUS – Canadian Auroral Network for the OPen Unified Study

SPIDR – Space Physics Interactive Data Resource

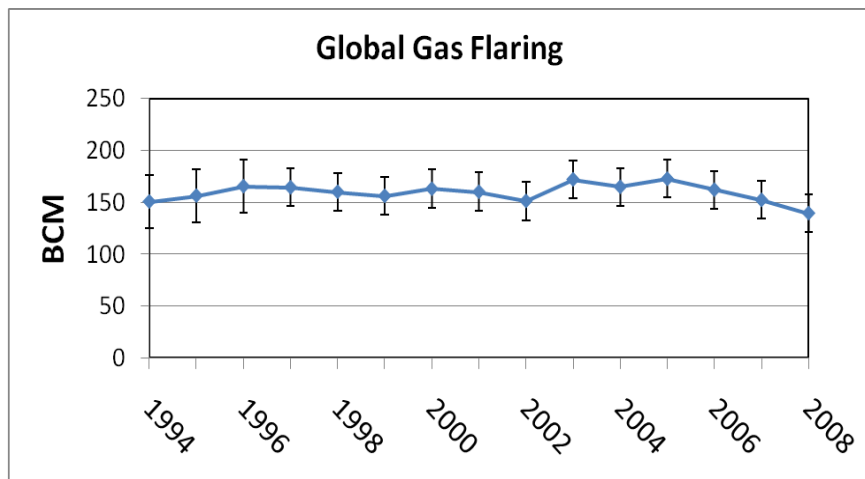
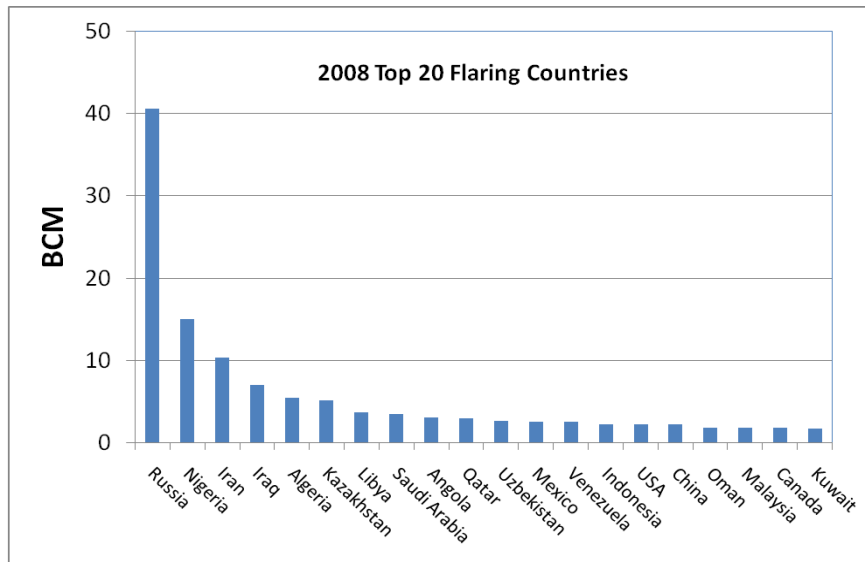
WDC – World Data Center





Milestone (AOP)

DMSP Estimates of Global Gas Flaring



Milestone: Estimate national and global gas flaring levels for 2008 using Defense Meteorological Satellite Program (DMSP) nighttime lights imagery.

Background: The 2008 gas flaring estimate of 139 BCM represents 21% of the natural gas consumption of the USA with a potential retail market value of \$68 billion. The 2008 gas flaring estimates indicate that global gas flaring has steadily declined by 19% since 2005 mostly due to gas flaring reductions in Russia and Nigeria.

Completion Date:

Planned (FY09-3Q) 30Jun09

Actual (FY09-3Q) 30Jun09

Significance: NOAA's published findings of national gas flaring volumes have been largely responsible for fostering improved natural gas utilization through the World Bank's Global Gas Flaring Reduction (GGFR) partnership.

Key: BCM – Billion Cubic Meters



Milestone (Internal NGDC) SNAAP API Requirements



Milestone: Provide functional requirements and mapping to the CLASS Developmental Team for the Simple NOAA Archive Access Portal (SNAAP) API.

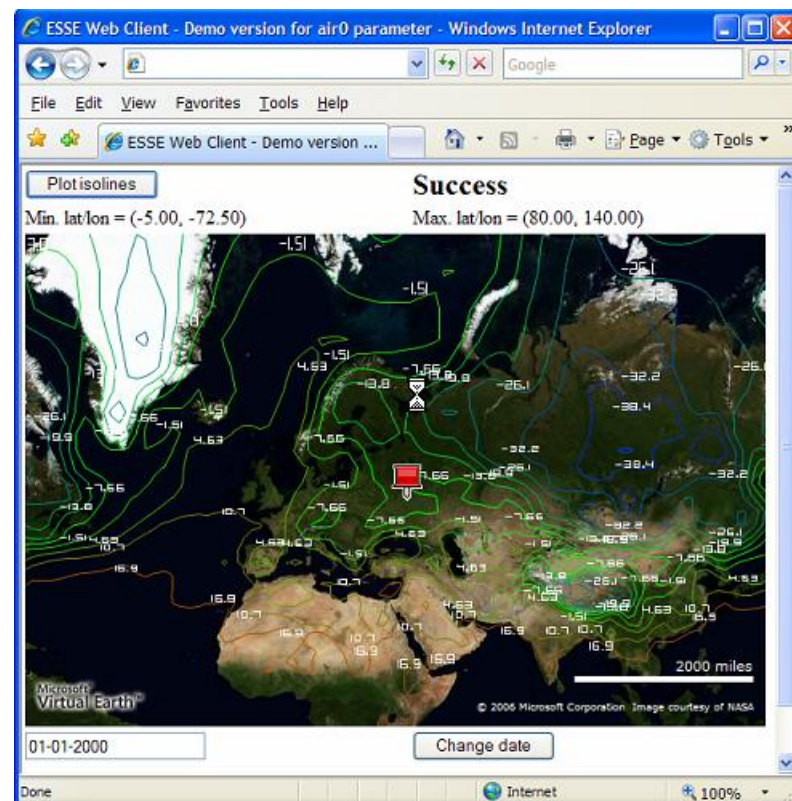
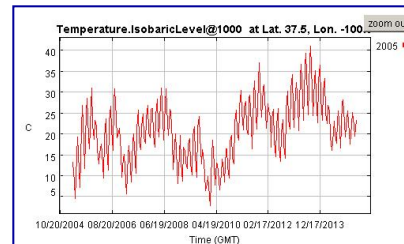
Background: The operational goals for SNAAP are to; 1) integrate diverse systems via a standards based, user focused WS interface, 2) demonstrate the concept of “fundamental separation” of archive & storage from access, 3) create tool that shows the user benefits of API's, 4) discover new technologies & evaluate cutting edge tools for handling integration/presentation, and 5) document integration of multiple data types & sources through an single API.

Completion Date:

Planned (FY09-3Q) 30Jun09

Actual (FY09-3Q) 30Jun09

Significance: Functional requirements/mapping architecture for SNAAP will facilitate CLASS implementation for improved user access to NOAA and non-NOAA environmental datasets.



Note: Logo purloined from the Strategic National Arts Alumni Project (SNAAP)

Key: API – Application Program Interface

CLASS – Comprehensive Large Array-data Stewardship System



Milestones & Performance Measures

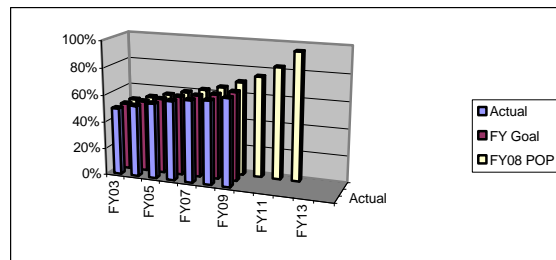
FY09 Performance Measures



Performance Measures

1 - Percentage of archived SWx data available to the public on-line

	Actual	FY Goal	FY08 POP
FY03	50%	50%	50%
FY04	53%	53%	53%
FY05	56%	56%	56%
FY06	59%	59%	59%
FY07	61%	61%	62%
FY08	62%	63%	65%
FY09	65%	66%	70%
FY10			75%
FY11			83%
FY12			95%
FY13			
FY14			

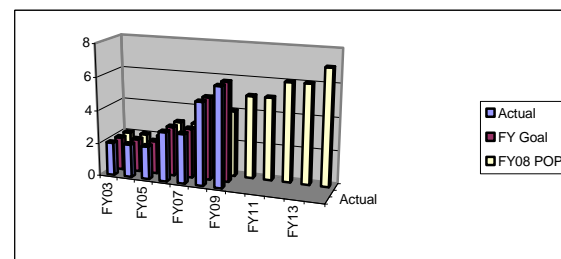


Current Month: *Preliminary*

This Q	Actual	FY09
Planned	This Q/Total	Target
65%	65%	66%

2 - Improved retrospective products for understanding the space environment

	Actual	FY Goal	FY08 POP
FY03	2	2	2
FY04	2	2	2
FY05	2	2	2
FY06	3	3	3
FY07	3	3	3
FY08	5	5	4
FY09	6	6	4
FY10			5
FY11			5
FY12			6
FY13			6
FY14			7



Current Month: *Preliminary*

This Q	Actual	FY09
Planned	This Q/Total	Target
6	6	6

Updated: 07 Jul 09

The FY2008 Program Baseline Assessment (FY08 PBA) was released 08 June 2005.



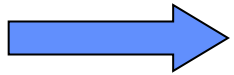
OUTLINE

Solar & Terrestrial Physics Division



STP Program Overview

Milestones & Performance Measures



Awards and Personnel Kudos

Accomplishments

Special Interest Items

Issues & Summary



Awards & Personnel Kudos

Director's Award: Dr. Eric Kihn



This award recognizes an individual or group that has significantly enhanced NGDC's reputation in the external world.



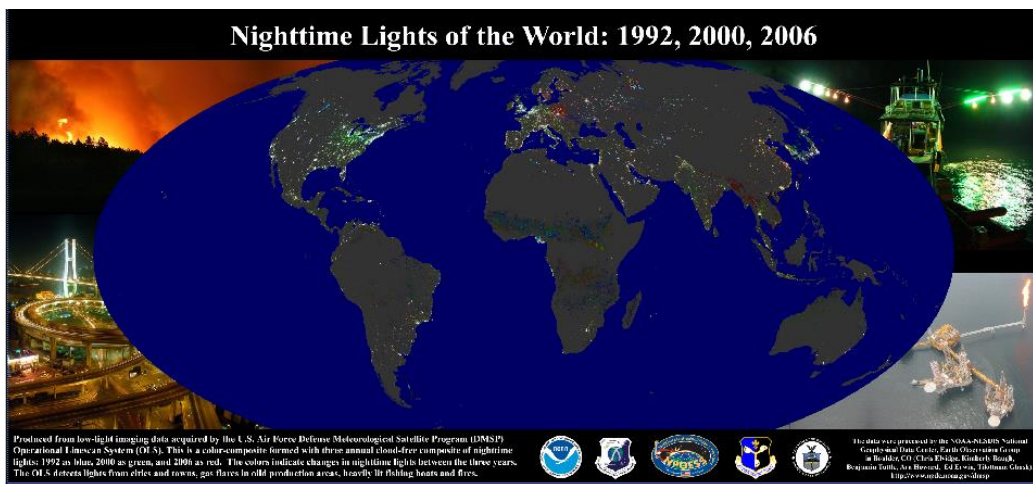


Awards & Personnel Kudos

Staff Excellence: Ms. Kim Baugh



To recognize an individual or group that has achieved excellence through contributions to NGDC's mission and to the scientific community, and/or who has fostered cooperation within NGDC.



Kim was also awarded a Cash-in-a-Flash award from CIRES based on her recent development of a technique for recovering the visible-band gain settings for the Operational Linescan System (OLS) sensors flown on the U.S. Air Force Defense Meteorological Satellite Program (DMSP).





OUTLINE

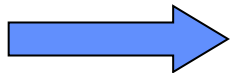
Solar & Terrestrial Physics Division



STP Program Overview

Milestones & Performance Measures

Awards and Personnel Kudos



Accomplishments

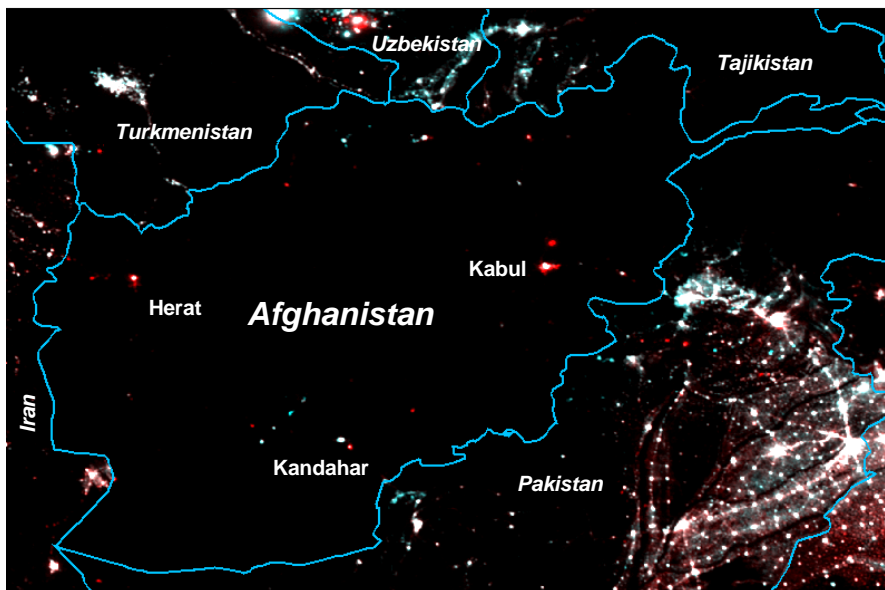
Special Interest Items

Issues & Summary



Accomplishment

Nighttime Lights in Afghanistan



Color Key: Red – Increased lighting; Cyan – Decreased lighting; White – Stable lights (2002-2008)



The **DMSP nighttime lights team** recently provided nighttime lights imagery to U.S. coalition forces within Afghanistan through the USAF TENCAP program. The image on the left is a 2-color composite for DMSP-OLS imagery from F15 (Blue/Green) and F16 (Red) for 2002 and 2008, respectively. The intent of the Tactical Exploitation of National CAPabilities (TENCAP) program is to demonstrate “leading edge space technologies with potential to enhance combat capabilities of units in the field, then transition these combat systems to warfighters much more rapidly than traditional acquisition processes.” LtCol Michael Kloenne (AFSPC SIDC/TCU) expressed his satisfaction and appreciation to **Ben Tuttle** for providing this service.

SIDC – Space Innovation and Development Center (formerly the SWC)

SWC – Space Warfare Center

Accomplishment

Ionospheric Scintillation Prediction



Jicamarca Scintillation Forecast (FIRST):



h'F time history (19:30LT previous day):

DOY (UT)	35	34	33	32	31	30	29
19:30LT	255.0	247.0	245.0	242.5	237.5	257.0	260.0

The **NGDC/SWPC ionospheric team** has developed a new scintillation prediction tool. Ionospheric scintillation is a naturally occurring phenomenon, prevalent in the early evening hours at low latitudes, that can seriously disrupt radio communications and navigation. By measuring the vertical structure of the ionosphere the team was able to identify precursors to scintillation and to develop probability indicators that can be used by radio communicators and navigators to predict the occurrence of scintillation. A prototype scintillation forecast tool is now available for certain geographic regions. **Rob Redmon** recently demonstrated the scintillation forecast prototype tool at the annual Space Weather Workshop in Boulder, CO. It is also highlighted "[In the Spotlight](#)" segment for NGDC under the name **Forecasting Ionospheric Real-time Scintillation Tool (FIRST)**.



Accomplishment

Solar Cycle Trends in POES Particle Data



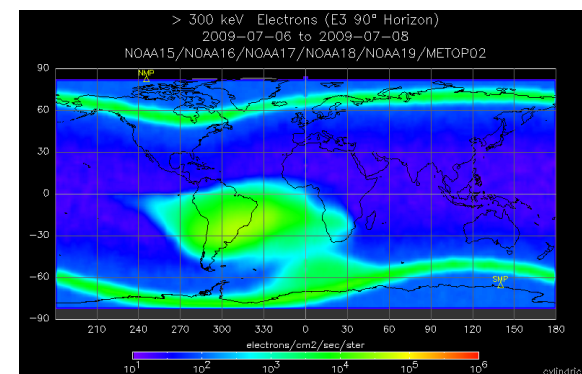
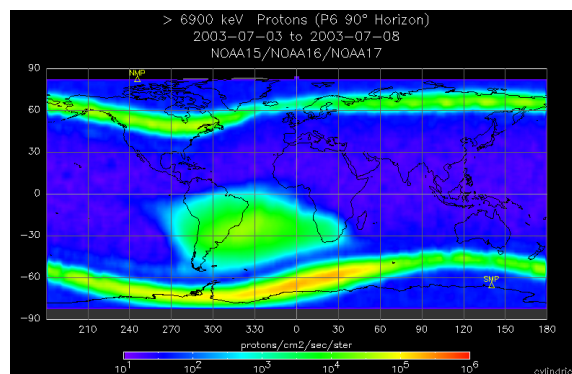
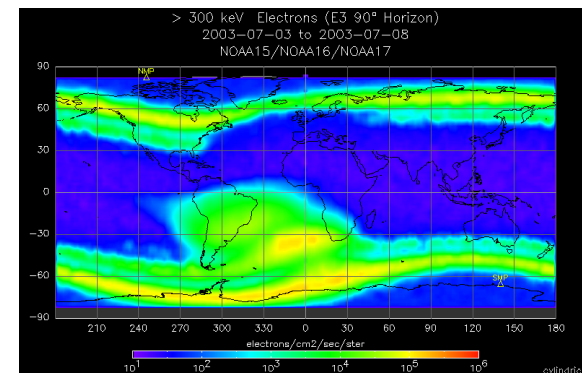
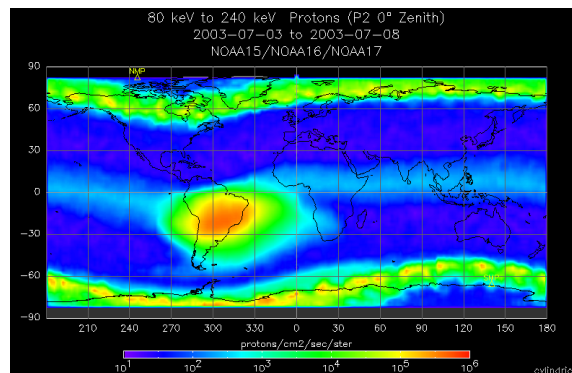
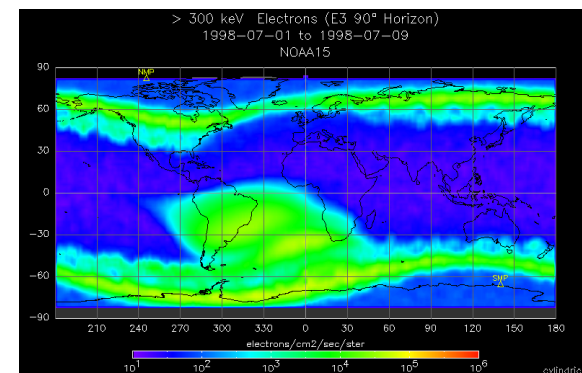
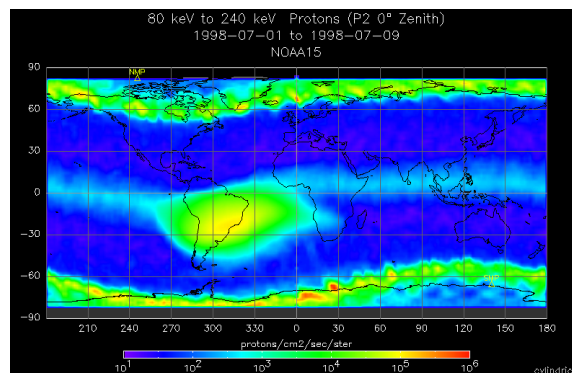
Dan Wilkinson has prepared synoptic plots of POES energetic charged particles precipitation which are now available [on-line](#). These data can be used for qualitative¹ studies of the near-earth space environment.

A preliminary look at the measured particle fluxes for 2009 compared to 2003 (solar max) and the previous solar min (1998) shows a marked decrease of trapped >300-keV electrons within the outer van Allen radiation belt and an associated widening of the “slot-region” (right). Also shown (left) are the fluxes of moderately energetic (80 – 204 keV) protons within the South Atlantic Anomaly (SAA) for the same intervals.

See Dan Baker's plots included in the “Special Interest Items” section of this quarterly brief.

¹These data have not been corrected for cross-species contamination.

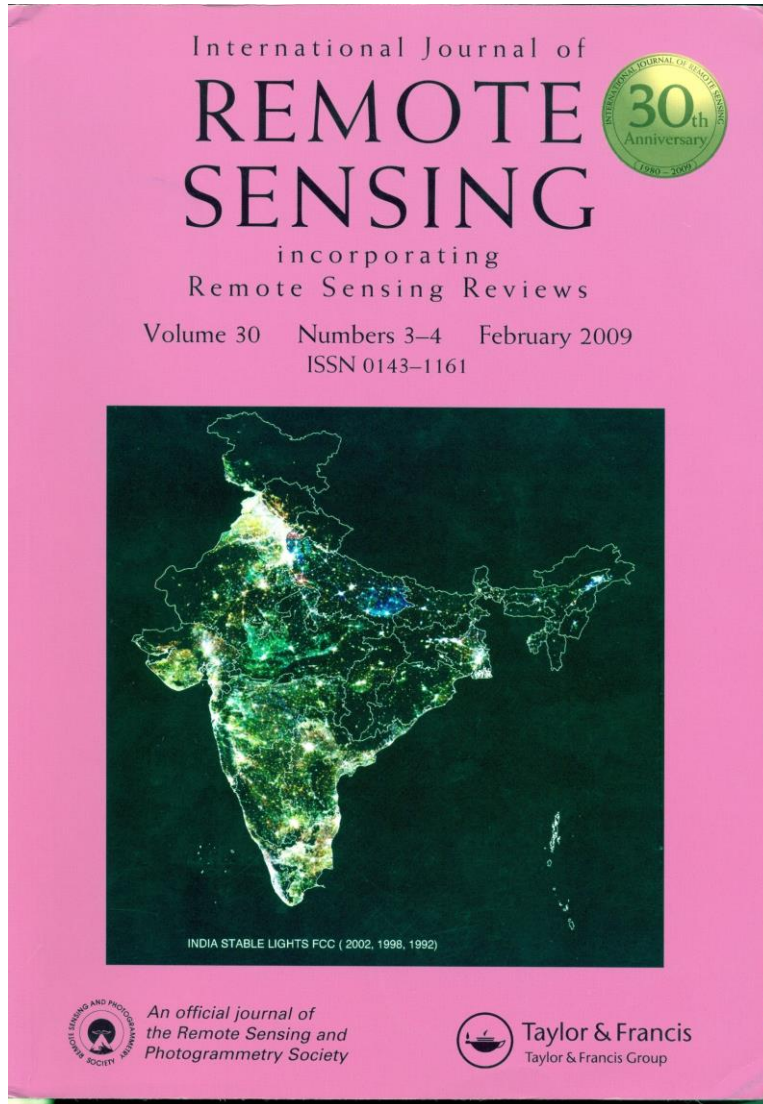
STP PMR – 13 Jul 2009



<http://poes.ngdc.noaa.gov/data/plots/maps/png/>

Accomplishment

Socio-economic Trends in India



The **Earth Observation Group** within NGDC recently published an article on economic trends within India using DMSP nighttime lights imagery. The article, which was published in the International Journal of Remote Sensing, found that changes in the electric power consumption patterns over time were well correlated with socio-economic development and energy utilization processes. The interval of time studied was 1993 to 2002. Over this time period the observed increases in nighttime lights were indicative of the expansion of population around the peripheries of major Indian cities. On the other hand the reduced lighting in some areas were indicative of decreased economic well-being or instabilities in the local electric power grids.





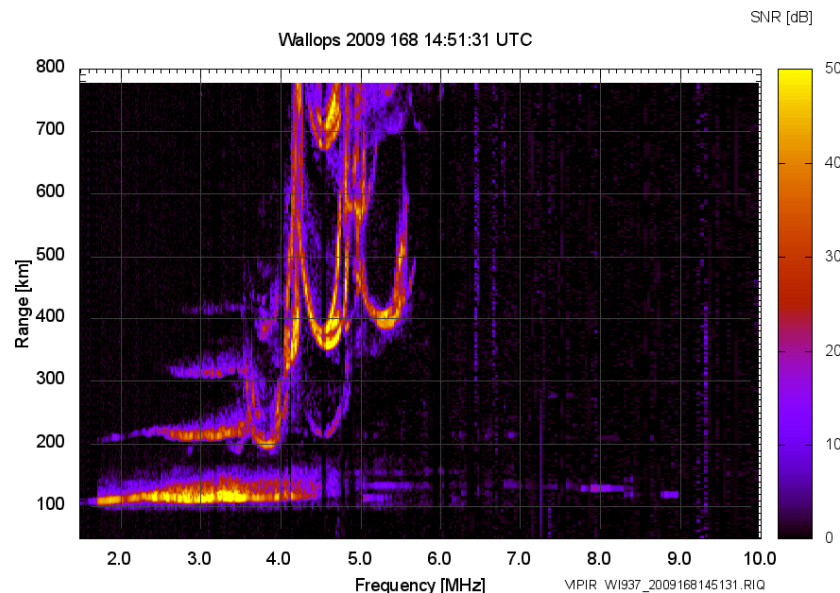
Accomplishment

Wallops Ionosonde Returned to Operations



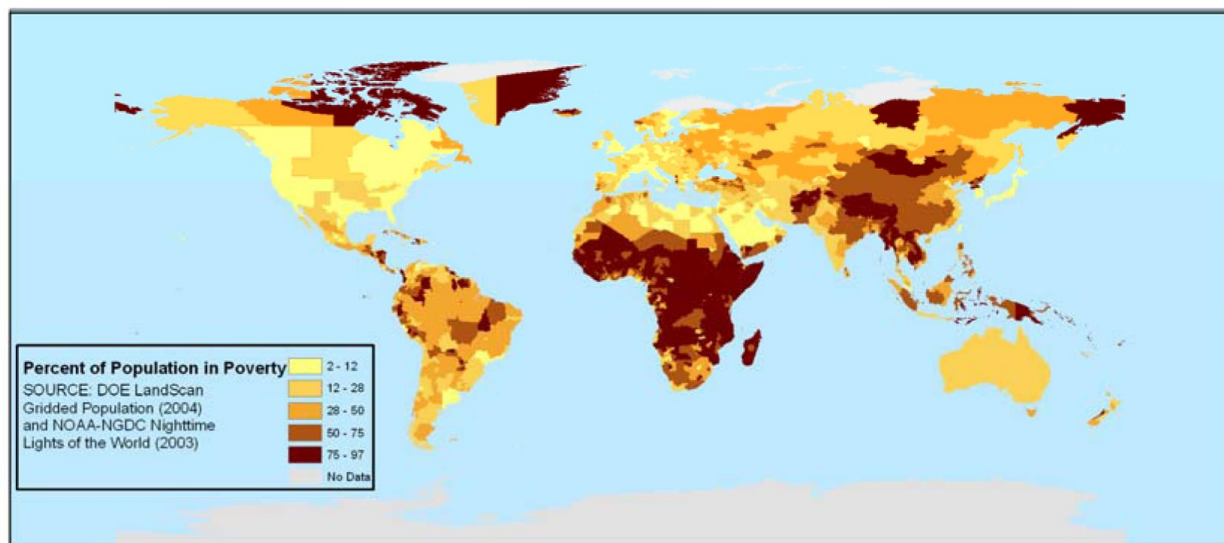
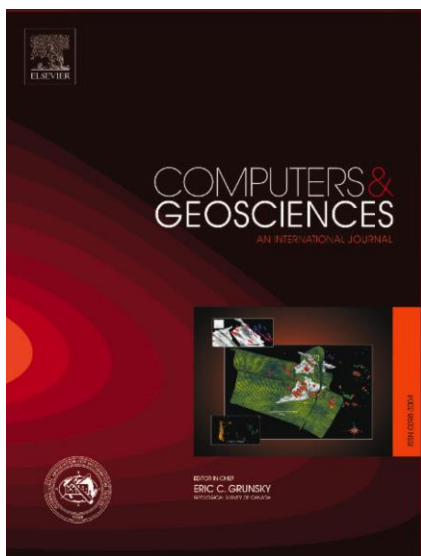
The **Vertical Incidence Pulsed Ionospheric Radar** (VIPIR) located at Wallops Island has now been returned to operations after a significant downtime due to technical (and organizational) issues. VIPR is a new generation ionosonde with unprecedented ionospheric sounding capabilities. These capabilities come, however, with a “cost” in that the size of a typical sounding is 100 MB at a cycle rate of ~15 minutes. NGDC is now recognized for advancing the state of the art of ionospheric sounding through its association with Dr. Terry Bullett at CIRES. The Wallops Island VIPIR is used to support a number of NASA sounding rocket missions.

Consideration must be given to handling within the archive the potentially large data volumes associated with the VIPER radars.



Accomplishment Global Poverty Map

The EOG has published the first global poverty map based on satellite data in collaboration with the University of Colorado, the University of Denver, and the U.S. Department of Energy (DOE). The article titled "A global poverty map derived from satellite data" was published by "**Computers and Geosciences**" in its June 5, 2009 online issue (<http://dx.doi.org/10.1016/j.cageo.2009.01.009>). The poverty map is based on the finding that the brightness of satellite observed nighttime lighting is closely linked with prosperity. The team developed and calibrated a poverty index that measures the brightness of lighting per person to estimate poverty levels. The poverty map combines Defense Meteorological Satellite Program nighttime lights imagery, available from NGDC, with a global population count grid from the DOE. Previous efforts at poverty mapping have been regional in nature due to the dearth of traditional poverty surveys in geospatial formats.





OUTLINE

Solar & Terrestrial Physics Division

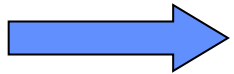


STP Program Overview

Milestones & Performance Measures

Awards and Personnel Kudos

Accomplishments



Special Interest Items

Issues & Summary

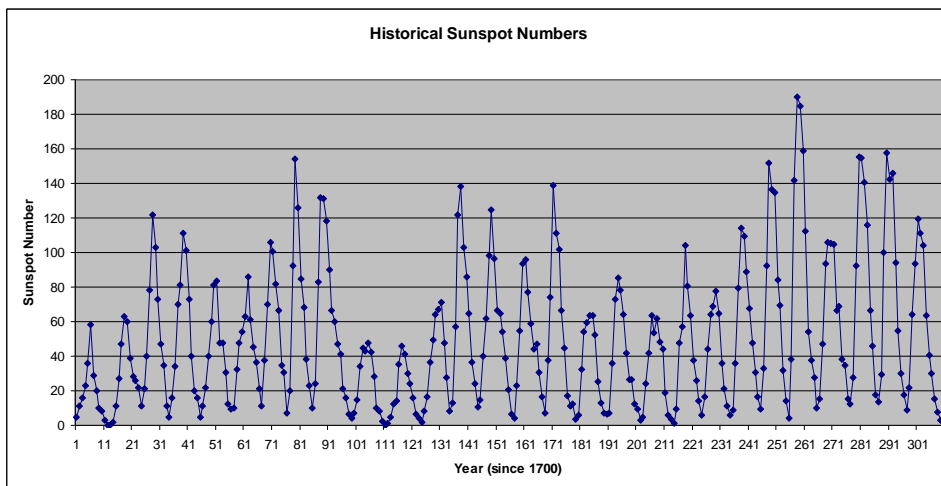


Special Interest Item

Space Weather Highlighted in GCN



Cycle 24 predictions for the magnitude of the next solar cycle were highlighted in an article published in 18 May edition of Government Computer News. **Dr Eric Kihn** of the NGDC participated in the Cycle 24 Prediction Panel which was coordinated through the NWS SWPC. These findings are generally in agreement with the historical sunspot records maintained by NGDC. Hollings scholar, **Matthew Niznik**, is investigating trends in the current solar cycle compared to the historical records and evidence for climatic impacts.



UPDATE

GCN

Government Computer News

NOAA predicts mild solar season

Good news for comm systems, though a severe storm could occur in a down cycle

BY WILLIAM JACKSON

GCN STAFF

AS THE SUN enters a new cycle of solar activity, an international panel of experts predicted that the coming solar storm season will be milder than usual, with fewer sunspots on average and fewer solar storms battering the Earth's magnetic field and atmosphere.

Those high-energy eruptions from the sun can interfere with satellite-based and terrestrial communications and power distribution, damage satellites, and pose a threat to astronauts.

The National Oceanic and Atmospheric Administration's Space Weather Prediction Center released the forecast this month, and it is welcome news for the operators of the Earth's electronic infrastructures and those who depend on them. But severe storms remain a threat.

"As with hurricanes, whether a cycle is active or weak refers to the number of storms, but everyone needs to remember it only takes one powerful storm to cause huge problems," said Douglas Biesecker, a solar physicist at NOAA and chairman of the panel. "The strongest solar storm on record occurred in 1859 during another below-

average cycle."

That storm shorted out telegraph wires, caused fires in North America and Europe, and produced northern lights bright enough to read by, according to NOAA.

In the 150 years

since then, society has become increasingly dependent on space-based communications and other electronics. A strong solar storm has the potential to knock out commercial communications satellites and ground Global Positioning System signals. Cellular phone signals could be affected, and routine transactions from automated teller machines and credit card terminals that rely on satellite links could be disrupted.

If a storm is severe enough, it could even damage physical infrastructure. In a recent study, the National Academy of Sciences found that if a storm as severe as the one in 1859 occurred today, it could cause as much as \$2 trillion in damages and require four to 10 years for recovery,

compared with the estimated \$125 billion in damages Hurricane Katrina caused.

Solar cycles last about 11 years on average and are defined by sunspots, areas of highly organized magnetic activity on the sun's surface.

Sunspots are characterized by their polarity, which reverses with each new solar cycle. At the beginning of a cycle, they typically appear first in the higher latitudes

near the solar poles and over time begin to appear closer to the solar equator. Sunspot activity peaks in the middle of a cycle.

In 2007, the Space Weather Prediction Center said the current cycle, identified as Solar Cycle 24, would begin in early 2008 and peak in late 2011 or early 2012. At the time, scientists were split on whether the new cycle would be severe or mild.

The first sunspot of Cycle 24 appeared in January 2008, but sunspot activity from Cycle 23 wound down more slowly than expected. That lull, which stretched

Cycle 23 to an unusual 12 years and seven months, convinced forecasters that the new cycle would be mild. Cycle 24 now is expected to peak in May 2013 with an average of about 90 sunspots a day.

"We see Cycle 23 and 24 sunspots overlapping, and we expect to for a number of years," Biesecker said. "That's normal."

Reading solar cycles is an art and a science. Scientists use a combination of statistical techniques and models for leading indicators in observing sunspots and other solar magnetic activity. Although sunspots from different cycles overlap, one cycle is said to begin when the average activity of the preceding one peters out.

"It's like detecting when a recession starts or ends," Biesecker said. "You have to look back."

Infrastructure operators, including the Defense Department, use the Space Weather Prediction Center's forecasts and reports to plan activities. One critical area is planning the life cycle of satellites, which are affected by the electromagnetic beating they take from storms and the increased drag created in a highly charged atmosphere.

"The higher the activity in the cycle, the faster the satellite will fall out of orbit," Biesecker said. ■

GOVERNMENT COMPUTER NEWS

05.18.09

7



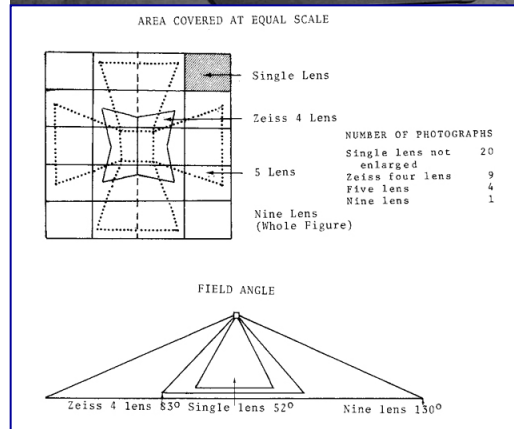
Special Interest Item

Historical NGS Aerial Photographs



The **EOG** group is working with NGS to catalog a unique photographic dataset consisting of historical aerial photos taken from the 1920s to the 1960s. These photographs are part of an extensive collection of multi-lens camera images taken aboard aircraft by the **Coast and Geodetic Survey** prior to the formation of NOAA. These cameras collected frames looking straight down from the airplane and off to the sides (oblique photography) simultaneously to provide extended spatial coverage. The NGS aerial photography is regarded as the premier record of land cover and coastal features for the era prior to the advent of satellite remote sensing. For a number of years this dataset was feared lost until it was found by accident at the Federal Archives Center in Tacoma Park, MD. These historical photographs have now been approved for data rescue through the NOAA Climate Data Modernization Program (CDMP).

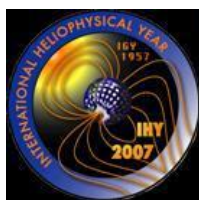
STP PMR – 13 Jul 2009





Special Interest Item

IHY Africa – Livingston,



INTERNATIONAL HELIOSPHERIC YEAR

2007 – 2009

7th to 11th June 2009

IHY-Africa/SCINDA 2009



Justin Mabie participated in the combined International Heliospheric Year-Africa (IHY-Africa) and SCINtillation Decision Aid (SCINDA) workshop in Livingstone, Zambia on 07-12 June 2009. The purpose of the workshop was to provide a forum for the development of space science and education in Africa in accordance with the overall IHY-Africa objectives. The workshop also served as the culmination of a 2-year partnership with CIRES and NOAA to provide a means for the GPS community to share environmental data collected in Africa. At the workshop, Mr. Mabie presented an overview of the data portal he developed for the community and continued to work with the various African data providers. Justin also participated in SCINDA workshop discussions and helped develop policies to determine how data will be handled, archived and disseminated within the scientific community.



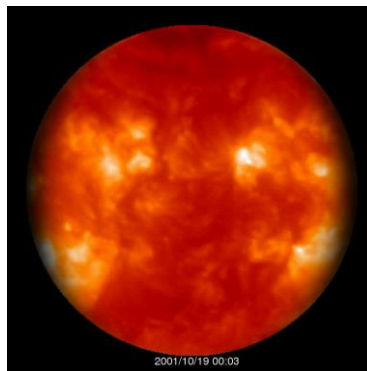


Special Interest Item

GOES-14 PLT



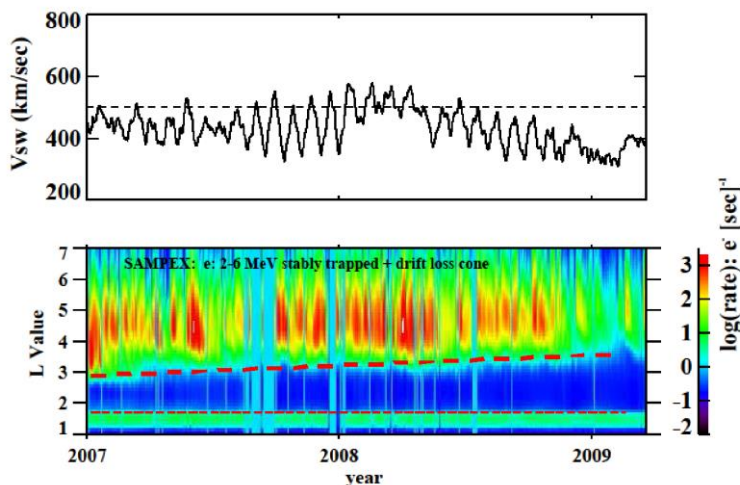
The GOES-O satellite lifted off from Launch Complex 37 at Cape Canaveral Air Force Station at 18:51 U.T. on 27 June 2009, atop a Delta IV rocket. On July 8 GOES-O reached its planned orbit altitude of approximately 35,900 kilometers (22,300 miles) above Earth's surface, at which point GOES-O became GOES-14. All indications are that the spacecraft is healthy with all systems nominal. Space weather instruments included on GOES-14 are the Solar X-ray Imager (SXI) and Space Environment Monitor (SEM-2). The **GOES-14 Post-Launch Test (PLT)** is scheduled to start on June 17th and will likely last about 6 months. NGDC will participate in the spacecraft PLT but does not anticipate any issues.



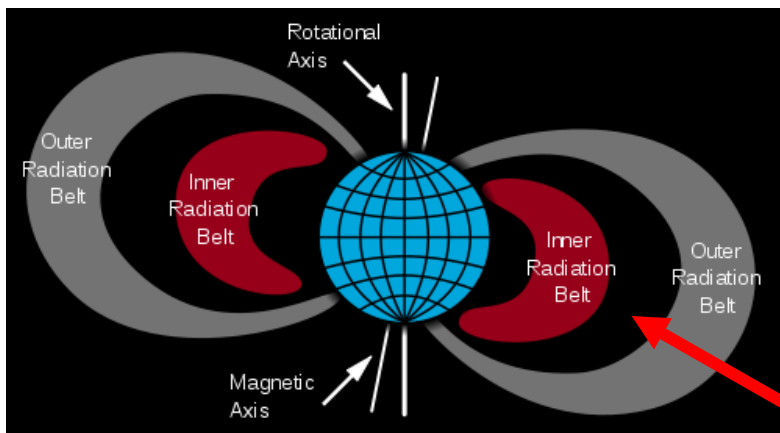
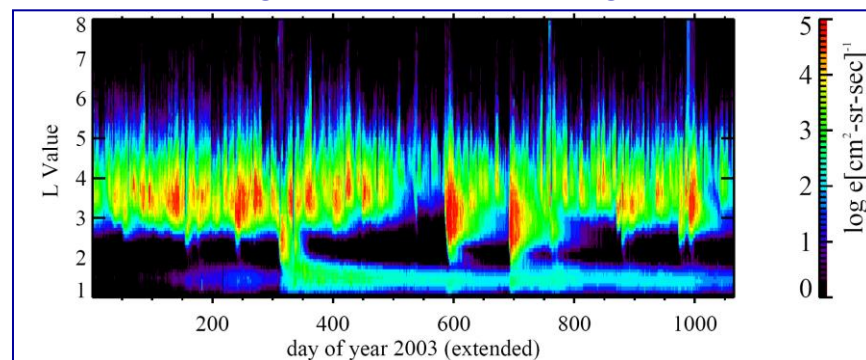
GOES-12 SXI
Courtesy Steve Hill



Broadening Slot Region



Professor Dan Baker (LASP) reported on the current quiescent state of space at the recent Geospace Environment Modeling (GEM) workshop in Aspen, CO. In the example on the left, energetic electron data within the van Allen radiation belts show an increasing separation between the inner & outer belts during these quiet times. Conversely, data taken around solar max periodically show a complete filing-in of the “slot” region.



NGDC reported on several items at the GEM workshop including scientific presentations by **Rob Redmon** and **Eric Kihn**.

Slot Region



Special Interest Item

CSAV

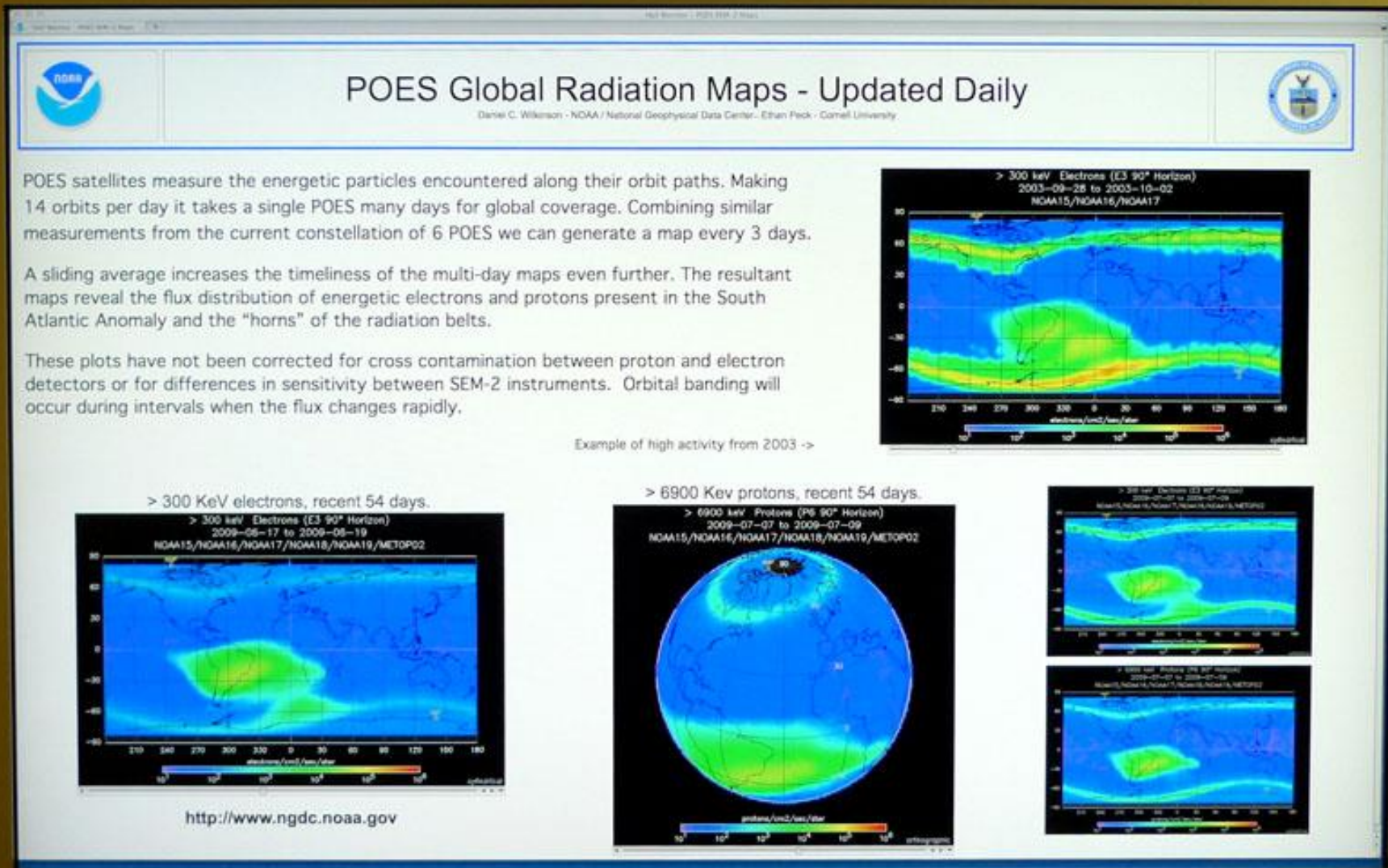


Fran Coloma recently participated as an instructor at the University of Hawaii's Center for the Study of Active Volcanoes (CSAV) International Training Program at the Hilo Center. CSAV's International Training Program is designed to assist developing nations attain self-sufficiency in monitoring volcanoes. Fran provided hands-on training to participants from Costa Rica, the Philippines, Indonesia, Columbia, El Salvador and Ecuador. Students collected deformation data using precise survey leveling & GPS techniques. The training also touched on electronic distance measurement techniques, discussions of water-tube tilt meter (wet tilt), single-setup leveling (dry tilt), electronic tiltmeters, understanding the GPS RINEX format, GPS tribrach calibration methods and GPS requirements for data processing and storage.



Special Interest Item

POES Radiation Maps – On Display





OUTLINE

Solar & Terrestrial Physics Division



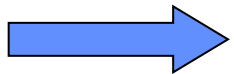
STP Program Overview

Milestones & Performance Measures

Awards and Personnel Kudos

Accomplishments

Special Interest Items



Issues & Summary



Issues & Summary

List of Outstanding Issues



- **Continuity of solar data services (1QFY09) – active**
 - ✓ *Refocus of NWS/SWPC Objectives (2QFY08) – NLAI*
- **NightSat Mission Concept (1QFY08) – active**
 - ✓ *NGS Aerial Photography (1QFY08) – NLAI*
- **DMSP Data in CLASS (1QFY08) – active**
 - ✓ *Migrate the DMSP OLS Archive to CLASS (2QFY07) – O.B.E.*
 - ✓ *ADIC-API Needed (1QFY07) – NLAI*

NLAI = No Longer An Issue



Issues & Summary

Solar & Terrestrial Physics Division



- All 2QFY09 milestones met & performance measures achieved
- Delays processing MOAs/MOUs through legal
- Initial planning for SWx Team Off-site

Other Items (not reported previously):

- ✓ Reprocessing of DMSP fine data – *E. Erwin*
- ✓ New schema for Geomagnetic datasets – *J. Mabie*
- ✓ Possible applications for Google Analytics – *R. Redmon*

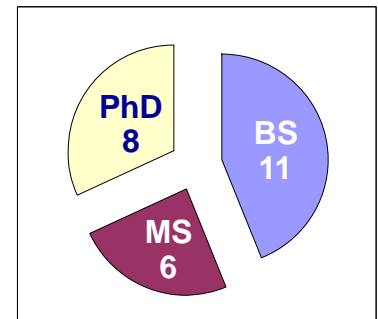
Metrics (3QFY09/YTD)

Papers published: 3/13 Reports: 9/27

Papers presented: 9/33 Professional Societies: 17

Fellows: 1

Awards: NGDC Awards





QUESTIONS?